

## DOCUMENT RESUME

ED 081 452

LI 004 460

AUTHOR DeProspero, Ernest R.; Voos, Henry  
TITLE The Library Researcher and Policymaker: An Observation Here, A Speculation There; and, Comments on Research in the Information Sciences.  
INSTITUTION American Library Association, Chicago, Ill. Library Research Round Table.; ERIC Clearinghouse on Library and Information Sciences, Washington, D.C.  
SPONS AGENCY National Inst. of Education (DHEW), Washington, D.C.  
PUB DATE Jun 72  
NOTE 34p.; (17 references); An oral summary of this paper presented as a part of the Library Research Round Table program of the June 25 to July 1, 1972 Annual Conference of the American Library Association  
EDRS PRICE MF-\$0.65 HC-\$3.29  
DESCRIPTORS Decision Making; \*Information Science; Librarians; \*Library Research; Library Science; \*Policy Formation; Researchers; \*Research Utilization

## ABSTRACT

An attempt is made in this paper to characterize, and identify some of the basic issues in library research which require resolution. DeProspero's primary purpose is to suggest some of the reasons which lead to the conclusion that much of the research effort in librarianship, the objective of which has been to influence library policy, has been ineffectual. The practicing librarian, who has participated in assisting the library researcher, has probably benefited the least. The library researcher must learn to communicate with the library policymaker on some equal basis. If he continues to talk only to himself or to other researchers, research efforts are not likely to contribute toward the solutions of some of the pressing and growing problems confronting the library. This paper is not directed exclusively at those actively engaged in conducting research. The target group includes the library policymaker who has successfully withstood efforts by the researcher to influence his approaches to "business as usual." An objective of the paper is to suggest some of the reasons for the distrust of the librarian of the library researcher and some of the steps which might reduce that distrust. Voos takes a brief look at research in information science. (Related documents are LI 004 461 and LI 004 462.) (Author/SJ)

U.S. DEPARTMENT OF HEALTH,  
EDUCATION & WELFARE  
NATIONAL INSTITUTE OF  
EDUCATION

THIS DOCUMENT HAS BEEN REPRODUCED EXACTLY AS RECEIVED FROM THE PERSON OR ORGANIZATION ORIGINATING IT. POINTS OF VIEW OR OPINIONS STATED DO NOT NECESSARILY REPRESENT OFFICIAL NATIONAL INSTITUTE OF EDUCATION POSITION OR POLICY.

THE LIBRARY RESEARCHER AND POLICYMAKER  
An Observation Here, A Speculation There

by Ernest R. DeProspero  
Rutgers University

AND

COMMENTS ON RESEARCH IN THE INFORMATION SCIENCES

by Henry Voos  
Rutgers University

*This publication was prepared pursuant to a contract with the National Institute of Education, U.S. Department of Health, Education, and Welfare. Contractors undertaking such projects under government sponsorship are encouraged to express freely their judgment in professional and technical matters. Points of view or opinions do not, therefore, necessarily represent official National Institute of Education position or policy.*

June 1972

ERIC Clearinghouse on Library and Information Sciences,  
Washington, D.C.  
American Library Association  
Library Research Round Table  
Chicago, Ill.

National Institute of Education (DHEW)  
Washington, D.C.

ED 081452

LI 004 460

### Preface

The genesis of this paper evolved out of a series of meetings with the Library Research Round Table 1972 Program Committee, dating back to the January A.L.A. Midwinter Meeting. The intellectual stimulus and encouragement of Barbara Slanker, Program Chairman, and Josh Smith, Program Committeemen, provided the much needed push to "stay with it." At first, it was felt that a position paper on the need for a new library research journal would be useful. We then moved away from that topic to one on the "Present Status of Research in the Field of Library Science." However, as the committee continued its work and began to home-in on the specifics of the program, it became apparent that the topic needed better focus.

I finally decided that an attempt to develop a position paper on the relationship between the library researcher and library policymaker would be an important start towards getting at some of the other crucial questions. That decision seemed to make sense in that one important role for LRRT has been its effort to improve communications between library researcher and library decisionmaker.

While I recognized that such a position paper would necessarily need to "cover the waterfront," I, nevertheless, wanted to place some guidelines on the observations and speculations made. Consequently, I asked Dr. Henry Voos, my colleague at Rutgers, to develop

a paper on the researcher in information science. I believe that his paper, "Research in the Information Sciences," very adequately fills that vacuum in my paper.

This paper was supported by the ERIC Clearinghouse on Library and Information Sciences. I want to express my gratitude to ERIC/CLIS for its support and total cooperation and to acknowledge LRRT for the opportunity to put my thoughts forth in writing for consideration and reaction.

THE LIBRARY RESEARCHER AND POLICYMAKER--  
AN OBSERVATION HERE AND A SPECULATION THERE

Ernest R. DeProspero  
Rutgers University

Introduction

Despite the presumption implied by the title of this paper, I believe that an attempt to characterize and identify some of the basic issues in library research which require resolution is useful. My primary purpose is to suggest some of the reasons which bring me to the conclusion that much of the research effort in librarianship whose objective has been to influence library policy has been ineffectual. Whatever the motive, the practicing librarian (from top to bottom in the library organization), who has participated in assisting the library researcher, has probably benefited the least. The library researcher must learn to communicate with the library policymaker on some equal basis. If he continues to talk only to himself or to other researchers, research efforts are not likely to contribute toward the solutions of some of the pressing and growing problems confronting the library today and for the foreseeable future.

This paper is not directed exclusively at those actively engaged in conducting research. My target group includes the library policymaker who has successfully withstood efforts by the researcher to influence his approaches to "business as usual." And, I believe, that more often than not such "strategy" by the librarian has been warranted. Again, an objective of the paper is to

suggest some of the reasons for the distrust of the librarian of the library researcher and some of the steps which might reduce that distrust.

Which areas of research need top priority, or which methodology and techniques should be or must be used are issues beyond the purview of this paper. For the latter, at least, the literature abounds. Nor do I casually cast stones at the library researcher (for, of course, I am one of them). And, while the situation as I see it is obviously complex, I don't plan to explain it away or justify its existence by concluding: "It's too complex and most of you probably won't understand it." If I am accused of oversimplification, so be it, but I believe that the issue is serious enough to warrant that risk. My values and bias should become clear very quickly. Much of what I want to say is speculative. Obviously, though, my own research efforts in the field have influenced my thinking on the matter.

As a final introductory comment, I suggest that the question of a new journal does not provide any clarity into the overriding issues. The question adds fuel to the fire but not very much light. Whether or not we need another journal is really very much beside the point. What we do need is open and honest debate on how well or poorly policy research in librarianship has progressed with some thoughts on the why of the "state of the art."

### The Mainstream of Library Research

In my attempt to pull together a number of varied and often elusive ideas for this paper, I have asked colleagues and students if they could identify library research which had significantly influenced library policy and practice. None were able to respond in any satisfactory way. Most of them suggested that "bibliographic" research had made an impact. Also, technical studies which have dealt with "physical" problems were significant. Others suggested that a survey here and there might have been influential, although they weren't sure that such surveys came under the label of research! The point is that we are indeed pressed to find good examples of a direct connection between research intended to influence policy and such policy. Why?

In part the answer may rest with some of the assumptions we have been making. Those of us who have accepted the label of "researcher" have generally accepted the following assumptions as given:

1. Research is good--inherently;
2. Research is, therefore, acceptable;
3. Research is, therefore, understood;
4. Research is, therefore, useful;
5. Research is, therefore, desirable and wanted.

In part, too, its ineffectiveness rests with the rather late arrival of research as a "thing to do" in librarianship. The inevitable lag in developing conceptual and theoretical bases has tended to produce some natural responses, <sup>i.e.</sup> general suspicion and

distrust of the researcher. Some consequences have been:

1. Narrow definition of "acceptable" or "legitimate" research.
2. Over- and under-utilization of rigorous approaches in both methodology and technique--a general insecurity in approach.
3. Closed system of sharing of mutual data bases, as well as results.
4. Hesitancy to borrow and use those findings and/or approaches appropriate to the problems under investigation, but no hesitancy to emulate the "scientific" mode.

Finally, one might suggest that in the profession (although certainly not peculiar to it) non-empirically based studies have tended to counter-influence the empirically based ones. Today, for example, we wrestle with the problem of "system" (large library operations in general) largely, I think, because the notion of "system" evolved out of an assertion that library system is good and preferable. At some point the assertion was declared fact. What should be remembered, however, is that the original assertion was never empirically based. Empirically-based efforts which suggest that a reconsideration of "system" is needed have been overwhelmingly rejected in the field.

Research in librarianship undoubtedly received its greatest impetus with the "grand experiment" at the Graduate Library School, University of Chicago. The excitement, interest, and activity generated during that period of time will probably never be

experienced again. Yet, the "Great Promise" has never been fulfilled. The influence on basic library policy has been minimal. The profound observation of a Joeckel, as modern today as it was pertinent then, remains unheeded. The "Great Promise" produced individuals prepared to go out and look at specific things. As that approach set the pattern, no overall effort to develop conceptual/theoretical bases (i.e., general laws) was ever really made or, more importantly, seen as necessary. And, since the public institution has never really needed to use these "specific things," there was no need to support basic research.

The "specific things" to which I refer are epitomized in the super-abundance of library surveys. I am sure that you can cite the numerous products which flowed either directly or indirectly from the influence of the "Great Promise," e.g., L. R. Wilson, The Geography of Reading: A Study of the Distribution and Status of Libraries in the United States (1938); Wilson, Branscomb, Dunbar and Lee: A Survey of the University of Georgia Library (1939); Joeckel and Carnovsky: A Metropolitan Library in Action (1940).

I am sure that the reader could cite the long list of studies which have come about either as a direct or indirect influence of the Graduate Library School. And, I am equally convinced that the reader would be challenged to locate any systematic pattern of positive influence, as reflected in the ways libraries are operated, as a consequence. I see no fundamental change in this condition of minimal impact which library research has had on the profession.

If anything, negative attitudes on the part of the practicing librarian have become increasingly rigid. The utilization of the "consultant" or "outside expert," who has too often legitimized preconceived conclusions, is the most commonly used and most highly influential outside force on library policy.<sup>1</sup>

A reasonable conclusion, although difficult for many of us to accept, is that no public agency really needs research in order to function. There is no guarantee that the current state of placing increased accountability on the public policymaker is more than rhetoric for the public. The fact remains that there will always be some public officer who will ask the unanswerable question. And, even when an answer exists, there is no guarantee that having it really changes anything. Historically, the public policymaker has never really needed to utilize empirically based research. Problems typically come to him as specifics, e.g., "x" dollars cut from the budget, so "which journal won't be ordered?"

On the other hand, the researcher typically will pursue problem-solving with a very different set of factors at play, e.g., money or data available or its usefulness to some student. The importance of the problem or his interest in the problem may have little to do with whether or not he pursues it. Clearly, if

---

<sup>1</sup>Why, for example, did Columbia University Library go to the outside consultant group, completely bypassing the Library School at Columbia, for its self-study? Is the library researcher incapable of conducting such a study? Are his efforts less legitimate than the consulting firm? Does that decision represent a basic distrust by both the library policymaker and the university policymakers of the library researcher, or is it that the library researcher may not provide acceptable findings?

research is theoretically oriented, it is not likely to be supported, financially, by the Federal government or private research foundations!

It should ~~seem to~~ no surprise, then, that library policymakers have come to distrust and/or pay little attention to the researcher. The inapplicability of what the policymaker sees as research tends to reinforce his already predisposed inclination to disdain the efforts of the researcher. In general, the literature which the policymaker is likely to read (assuming he finds the time to read) is grossly remiss in not containing information which could assist him in distinguishing between the "better" and "less useful" research product. Further, little if any attempt has been made to translate the more complex research products for the policymaker's consumption into language appropriate to the policymaker's needs.

The library researcher (again I accept from anyone that self-appointed label) continues to talk either to himself or other researchers. He still tends to perpetuate the "mystique" of the research process, in terms of style, language, technique, and intent, or he has done very little to place the process in the proper context.

#### Scientific and Policy Value Research

It has been a common phenomenon in our society for professional groups, in general, to resist the establishment of "norms" based on empirical findings. As suggested earlier, the acceptable pattern was one in which the "researcher" dealt with specific things.

One consequence was the attempt of the researcher to find legitimacy in his work. One could characterize much of the initial effort as "pseudo-scientific," emulating other disciplines which seemed more exact. One writer, referring to educational research (she could just as well have been writing about library research) notes:

The past was characterized by poorly stated research questions forced into ill-fitting research plans with correlation coefficients reported to an inappropriately fastidious third decimal place. Today the trend is toward greater innovation in asking questions and in designing research to explore them. A less pedantic reliance on form, combined with greater understanding of the methods of science, has led to increased regard for research procedures both innovative and rigorous. This experience, if applied, can ensure greater fruitfulness in future educational research. (emphasis mine).<sup>1</sup>

Hopefully that is the trend; and, hopefully, the researcher in librarianship is beginning to apply that approach suggested by Roberts. However, in my judgment, arriving at that "stage of research development" requires that an important distinction between "scientific value" and "policy value" research (to borrow the terms used by William Paisley) is made and understood. Scientific value research is concerned with a basic understanding of a phenomenon or process, regardless of its application to immediate, practical decisions. Policy value research is directly concerned with its application to immediate, practical decisions.

Commonly, scientific value research is achieved at the expense of policy value research since the conditions and variables

---

<sup>1</sup>Karlene H. Roberts, UNDERSTANDING RESEARCH: SOME THOUGHTS ON EVALUATING COMPLETED EDUCATIONAL PROJECTS, (Stanford, Calif., ERIC at Stanford, 1969), p. 1.

of that process are defined abstractly rather than concretely. Policy value research must establish definitions which are very specific to the situation or problem. That is, policy value research recognizes that the more sharply the study focuses on a single situation, the more likely it will have import for decisions specific to that situation.

In library research the dilemma has been our inability to establish a viable balance or "trade-off" between the two research objectives. The absence of general laws binding behavior in one situation to behavior in another situation has produced a kind of schizophrenia in the researcher, as he aimlessly shifts from one approach to the other, never quite able to conquer the delicate balance between the two. Consequently, the decision to study a single situation has usually been a decision against scientific value research.

Basically, then, policy value research has as a primary objective the improvement of the decisions of the policymaker. It is ironic, then, that there is so little evidence to support the conclusion that the library policymaker has utilized such assistance on any systematic basis.

The absence of generalizable laws has circumvented policy value efforts in librarianships. Reliance on the research finding is missing since we cannot "deduce" from the general law to the specific situation. Yet, the library policymaker remains willing and ready to rely on "pseudo-deductive" bases for his decisionmaking approach to problem solving. In essence, the library "standards" have served as that pseudo-deductive model. cursory examination quickly reveals that this model is non-

empirically based, houses innumerable unstated assumptions, and substitutes assertion for fact. Only recently have some of the weaknesses of that model for decisionmaking become evident. (During periods of extended affluence it is apparent that almost any model of decisionmaking will do for the public policymaker).

The research process involves the systematic gathering of selected facts and the interpretation of those facts in the light of some specified objective or set of objectives. A concern of research is the gathering of intelligence and reducing risk-taking, i.e., seeking knowledge. The process is cyclical, starting with values and ending with, presumably, insights which then lead to further research. The decision as to which problems constitute worthwhile "scientific value" research rests solely with the individual; conversely, that decision for "policy value" research usually rests elsewhere. In either case, severe and critical self-examination of his means and his objectives is the researcher's most appropriate guide.

The deductive approach, particularly prevalent in policy value research, at least in form, is a perfectly legitimate research approach IF a "general law" exists from which one could deduce or to which one could generalize from the particular event. That is, the individual situation does not validate the generalization but guides its formation and testing. The specific thing provides meaning, not truth. A "law" requires repeatability in that it formulates a basis for constant recurrence. How one conceives of the specific is a product of generalizations.

We should recognize the obvious that general laws are hard to come by, and then proceed with the task at hand. Attempts to purify the research process through the assumption of some existent general law have slowed down that process, if not contaminated it through intellectual dishonesty. That is, efforts to be "scientific," even if not possible nor necessary, have generated some widespread distrust of the process itself. The fact is that in most of what constitutes the Environment of library research, our knowledge is virtually all in the form of quasi-laws, at best. But if we cannot, in the present state of our knowledge, explain the exceptions to the specific cases, it surely does not follow that we know nothing at all. The primary limitation of the particular or semi-deductive approach is this: if particular, it is said to have established a "fact"; and, if general, it is said to have established a "law." We need not camouflage, and, therefore, distort the process through pseudo-scientific methodologies.

The researcher's attempt to answer the basic "scientific" question, "What the devil is going on around here?" requires open, honest, and realistic approaches. Perhaps the analogy of the "drunkard's search" is appropriate. Abraham Kaplan tells the story of the drunkard searching under a street lamp for his house key, which he had dropped some distance away. Asked why he didn't look where he had dropped it, he replied: "It's lighter here!" But, as Kaplan notes:

... the joke may be on us. It may be sensible to look first in an unlikely place just because "it's lighter there." We might reasonably entertain one hypothesis rather than another because it is easier to refute if false, or because it will eliminate a greater number of possibilities, or because it will show us more clearly what steps to take next.<sup>1</sup>

Research, then, is any conscious, premeditated inquiry, any investigation which tries to increase one's knowledge of a given situation. In that context, theory becomes significant in that it represents a tentative logical explanation of the network of relationships in a large body of individual situations. It has the role of "yet to be tested." To say that it may be good in theory but it doesn't work in practice is a contradiction in terms. If it does not work in practice over a reasonable span of cases, then it is not good theory. To be good theory means the explanation offered does work in practice and has verification in fact and in real life, or at least is subject to revision and re-testing.

The library researcher must accept openly the reality that while he can reduce the extent to which he is infected by the society or institution studied, he cannot eliminate infection. Some variety of truths is to be expected. Here we witness the pressure from the one side (the so-called scientific) to be neutral and unhumanly objective in the research pursuit; and, from the other side (the solve-my-special-problem group)

---

<sup>1</sup>Abraham Kaplan: THE CONDUCT OF INQUIRY, (San Francisco, Chandler Publishing Co., 1964), p. 17.

pressure to come up with the prescribed answer, or at least the most likely acceptable one. Perhaps the better balanced approach is the one in which the researcher accepts the role as an active agent in problem identity and solving.

If we want to share a common view of research with those in the environment under study, as I believe we must if communication is to become a reality, then it is essential that the library researcher remove the mystique of the detached referee who bases his judgment on a set of universal theories (which don't exist anyway!). Rather, the researcher concerned with influencing library policy should be viewed as an active engineer of social change in directions freely chosen by each community of interests. As such, his ability to play this role will be partly determined by his own identification with his adopted community and with its aims. That situation, obviously, requires active and open communication between the various parties.

Again, if my earlier point is correct, i.e., the library researcher has not yet learned how or recognized the need to communicate to the library policymaker, then the role of active agent is not possible or likely. To hide behind the mystique of the research operation may have placed the researcher in a position of weakness--if not intellectual ridicule. We should carefully examine the comment made by P. H. Cook some twenty years ago:

There may be an uneasy recognition of the existence of major problems, indeed problems closely related to the subject of the research, but considerable

anxiety associated with the task of tackling them. The advent of the research worker is hailed as providing an apparently painless way out of this conflict: executive authority may be under pressure to do something about problems that can no longer be avoided; it accepts research, therefore, in the hope that this will postpone indefinitely the need for action. Research, then, may be used as a neurotic escape from the need for facing up to problems.<sup>1</sup>

Research so conducted, that is, responding equally poorly from both sides, has been allotted a rather depressed status. It is considered neither hard-headed enough for the practical nor scholarly enough for full acceptance in academic circles.

#### The Relationship Between Researcher and Policymaker

The pattern of library research remains largely pseudo-deductive, thing-oriented, and non-pragmatic. To understand this pattern better and to explore some explanations for it, it is necessary and important to distinguish between two basic components of research: (1) the Environment of the research process, and (2) the View of the research process.

The Environment is easy to identify. It is, of course, the world of libraries and librarians. However, the View of research is a more complex and elusive concept. Three primary elements (for basic and simplistic illustration) constitute the View: (1) I DO research, (2) I LIKE research, and (3) I UNDERSTAND research. These three conditions are not automatically or necessarily inter-related. In fact, a key factor is

---

<sup>1</sup>P. H. Cook, "Methods of Field Research," Australian Journal of Psychology, 3 (2), 1951, p. 90.

the apparent lack of relationship. For the researcher, it is important that he do (obviously) and understand research. Of course, it is preferable to "like" it also, but not critical.

On the other hand, for the library policymaker, what is important is that he understand research--at least to the extent that he can interpret findings for input into his decision-making process. The other two elements are not critical. Again, of course, it might be a bonus if he liked it. Whether it would also be a bonus if he did it is, I suppose, debatable. I believe that there is the need to place the two major components, Environment and View, in a proper or at least realistic perspective. Then, we have the opportunity of finding ways of bridging the gap between researcher and policymaker.

#### ENVIRONMENT OF RESEARCH (E)

##### Symbol

A = Mainstream of librarianship--however defined.

A<sub>1</sub> = The library policymaker.

B = Library research.

B<sub>1</sub> = The library researcher.

C = Other research.

C<sub>1</sub> = Other researchers.

#### VIEW OF RESEARCH (V)

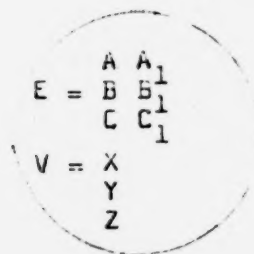
X = I DO research.

Y = I LIKE research.

Z = I UNDERSTAND research.

Figure I depicts the "ideal" (not necessarily desirable) relationship between Environment and View.

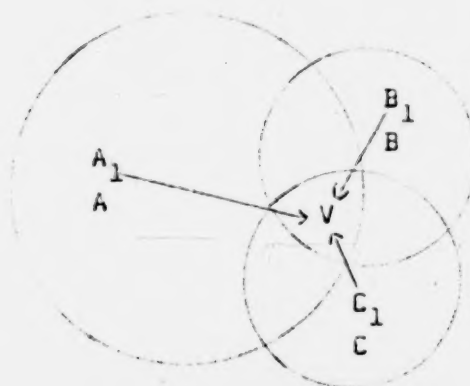
FIGURE I  
Ideal Relationship



The ideal relationship is one of total integration in which Environment and View are identical. There are no value conflicts; agreement exists on goal and objective. There exists, if you will, perfect harmony.

Figure II represents the relationship between Environment and View which the library researcher assumes exists. It depicts the normal modus operandi under which the research process takes place.

FIGURE II  
Assumed Relationship

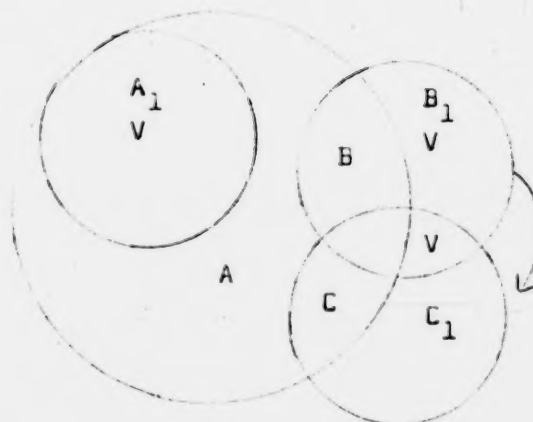


The "assumed" relationship operates on the basis that not only is there a sharing of environment (the obvious) but also a sharing of View (the questioned). The assumed relationship, while recognizing the existence of some conflict and disharmony--values do conflict here and there--operates under the assumption (usually implicit) that there exists a community of interest. A substantial degree of integration of Environment and View prevails and is functional to the research process. Basically, Figure II suggests that the researcher is both able and does communicate to and with the library policymaker; that research is wanted and understood.

Figure II represents a relationship which the library researcher should not assume to be the case. Rather, Figure III is closer to representing the "real" relationship between the library researcher and library policymaker.

FIGURE III

Real Relationship



In Figure III one can visualize the basic communication gap or vacuum between the library researcher and library policymaker. We, of course, share part of the same Environment. What we do not share, though, is the basic View of research. The library researcher has assumed that the critical element in the View is the "Y" or I LIKE research, and when effort has been made to improve the relationship, he has typically proceeded on the basis of finding ways to share "Y." I believe that this approach has been counterproductive. The library policymaker need not like research; he must, though, understand it better than he now does. The relationship under Figure II assumes a basic understanding in that "X," "Y", and "Z" are shared between the researcher and policymaker. The fact is that more often than not we have been on separate paths, with the "assumed relationship" exacerbating the gap between the two and often deterring (since there is not the existence of a felt need) needed efforts to bridge these different views.

For the "other researcher," it is not relevant or really important to him whether or not the library policymaker shares his view of research. He enters the Environment of librarianship for reasons which are primarily important to him. Whether or not he influences policy is of secondary concern, if of any concern at all.

At the same time, the library researcher, perhaps ironically, has tended to emulate the "other researcher's" scientific

approach (especially in terms of methodology and technique). This emulation may have resulted, in part, from the rather late start which research has had in the profession. The library researcher is still striving for legitimacy within the field. And, while the library researcher often shares a common View with the "other researcher," he has become the "bastard child." That is, to the extent that the library researcher wants to influence library policy, he has pursued a poor strategy, too often finding his products illegitimate to both the library policymaker and other researcher.

#### Concluding Thought

The "issue" of a new journal, per se, really begs the question. The disenchantment of both the library researcher and library policymaker with the resultant breakdown in communication ought to be the focal point from which other factors or suggested actions emerge. Obviously, various avenues need exploration. A primary goal should be the translation of research approaches and findings, particularly policy value research, into understandable language that is reasonably clear to the library decisionmaker. An important focus which highlights those factors which appear especially appropriate for action is needed. In large part we can achieve this primary goal through incorporation within the framework of current journals, if the problem is recognized and seen as important by those who determine the journal's policy. For example, special sections within each of the "popular" library journals could be devoted to this purpose.

Also, more effort at various professional meetings, than is currently made, can and should be devoted to increasing the dialogue between the researcher--his purpose, approach and finding--and the librarian. Library education should be much more active in preparing both the researcher and the library policymaker (actual or potential) for participation in this challenging process.

Finally, it may be that a new journal devoted to the translation of research findings for policy discussion is necessary. we shouldn't feel that this need is peculiar to librarianship! In a recent announcement for a new journal to be introduced by the National Capital Area Chapter of the American Society for Public Administration, entitled THE BUREAUCRAT, the publicity release states:

THE BUREAUCRAT, a new quarterly professional journal, is by and for bureaucrats. It will analyze major public policy questions and suggest possible solutions in a READABLE, CONCISE, and STRAIGHT-FORWARD fashion.

One can only conclude that for these policymakers the avenues of communication with the researcher have become pretty well closed!

The fact is that those who accept the label of "researcher" must be more willing than they have been to find better ways of selling their products; more willing to reduce the mystique of the research process; more willing to report their failures;

and more willing to apprise the library policymaker of some of the risks involved in the policymaker's efforts to put the findings into practice.

## RESEARCH IN THE INFORMATION SCIENCES

Henry Voos

It is difficult to take a position on research in a discipline that, although adolescent, seems still to be in the birth throes of definition.<sup>1,2</sup> The foregoing references are just two of many concerning this issue of definition of information science. In order to look at the research in a discipline, a definition of that discipline must be accepted. A recent issue of the NEW YORKER contained an article which discussed the purity of a discipline, and provided two standards which information science may not have met, primarily because it is not a pure discipline:

There are two simple and ruthless ethical standards by which the purity of any discipline can be determined....What is required is, first, an institutionalized indifference to men whose work has been completed--a disregard or contempt for those who have accomplished much but who have lost the will to create and whose major accomplishments are of the past..... What is also required is the institutionalized conviction that accomplishment is important only if it advances the discipline in some significant way. Competition must exist for creative achievement only -- with and for the discipline itself, rather than with competitors.<sup>3</sup>

For the sake of argument, we will use the definition currently used by the American Society for Information Science:

The science that investigates the properties and behavior of information, the forces governing the flow of information, and the means of processing information for optimum accessibility and usability. The processes include the origination, dissemination, collection, organization, storage, retrieval, interpretation, and use of information. The field is derived from or related to mathematics, logic, linguistics, psychology, computer technology, operations research, the graphic arts, communications, library science, management, and some other fields. <sup>4</sup>

The field may be said to be multidisciplinary rather than interdisciplinary, or pure.

A second facet of this paper is an acceptable definition of research. Some of the problems in attitude toward research in a multidisciplinary field are:

For the domain of truth has no fixed boundaries within it....Each discipline may take from others techniques, concepts, laws, data, models, theories, or explanations -- in short, whatever it finds useful in its own inquiries.<sup>5</sup>

...in contemporary behavioral science the attitude toward experimentation is in danger of becoming a kind of ritualism, as though the laying on of hands can itself effect a cure of diseased ideas. As with all rituals, the emphasis passes from content to form, from substantive questions to procedural ones, and virtue comes to be localized in the proper performance of fixed act sequences. Particular techniques are identified with "the scientific method", and inquiries in which those techniques are not employed are then dismissed as having no scientific significance....Observation remains basic to all science, but not all observation must be carried out by fully developed experimentation. 6

The above provides the context within which research in the "discipline" of information science must be viewed. We will adopt one of the dictionary definitions of research:

...critical and exhaustive investigation or experimentation having for its aim the discovery of new facts and their correct interpretation, the revision of accepted conclusions, theories, or laws in the light of newly discovered facts, or the practical applications of such new or revised conclusions, theories or laws. 7

Such a definition provides a wide latitude for evaluation.

One of the products by which research is sometimes measured is publication.

8,9

We can trace publication and its authors by volume, or by the citation patterns

10

exhibited. Another method recently used for tracing research patterns was proposed

11

in the field of mathematics. One can also examine the extant research and evaluate

it in terms of meaning or contribution to the discipline, and/or for its research design.

Publication patterns; To determine whether multiplicity of publication has any relationship to being cited was one way to test the assessment of research occurring in the information sciences. INFORMATION SCIENCE ABSTRACTS was checked between 1966 and 1970. The results are shown in Table I below:

TABLE I  
Authors Publishing One or More Times  
1966-1970

| No. of Pubns. | 1966 |      | 1967 |      | 1968 |      | 1969 |      | 1970 |      | X    |
|---------------|------|------|------|------|------|------|------|------|------|------|------|
|               | N    | %    | N    | %    | N    | %    | N    | %    | N    | %    |      |
| 1             | 1131 | 88.2 | 1182 | 88.3 | 1454 | 87.3 | 2832 | 88.3 | 3045 | 86.7 | 87.8 |
| 2             | 109  | 8.5  | 120  | 9.0  | 148  | 8.9  | 268  | 8.3  | 299  | 8.5  | 8.6  |
| 3             | 29   | 2.3  | 26   | 1.9  | 45   | 2.7  | 53   | 1.7  | 102  | 2.9  | 2.3  |
| 4             | 5    | .4   | 10   | .7   | 9    | .5   | 28   | .9   | 31   | .9   | .7   |
| 5             | 4    | .3   |      |      | 3    | .2   | 10   | .3   | 18   | .5   | .3   |
| 6             | 2    | .1   |      |      | 1    | .1   | 10   | .3   | 6    | .2   | .2   |
| 7             | 2    | .1   |      |      |      |      | 1    | *    | 1    | *    |      |
| 8             |      |      | 1    | .1   |      |      |      |      | 2    | *    |      |
| 9             |      |      |      |      |      |      |      |      | 3    | .1   |      |
| 10            |      |      |      |      | 6    | .3   | 4    | .1   | 5    | .1   | .2   |
| Total**       | 1282 |      | 339  | 4.4  | 1666 | 24.4 | 3206 | 92.4 | 3512 | 9.5  |      |

%Change

\* Less than .1%

\*\*Does not include those people who wrote no articles at all.

The percentage of authors who wrote two or more articles ranges from 11.8 to 12.7, averaging 12.0%. DeSolla Price states that one method of measuring productivity is to take the square root of the number of authors having written. This provides an order of magnitude for high producers. For 1966 this would be authors producing more than three papers, for 1967 those producing more than two papers, for 1968 and 1969 those producing more than three papers, and for 1970 those producing more than four papers. Percentage-wise the number of authors falling into this category for 1966 through 1970 respectively is 1.2, 2.7, 2.4, 1.6, and 1.7. As de Solla Price so aptly warns although there is no guarantee that the small producer is a nonentity and the big producer a distinguished

scientist, there is a strong correlation, and we are interested in looking deeper<sup>11</sup> into the relative distribution of big-and small-output writers. 12 Another way of looking at this is to apply Lotka's law, modified, which states that the number of people writing  $n$  papers is equal to  $1/n^2$ . If information science behaved similarly to the natural sciences, we could therefore expect that the number of authors producing exactly two(2) papers would be 25% or 320 for 1966, the number expected producing exactly three papers would be 11%, or 142 for 1966. It becomes obvious that the behavior of the information sciences has probably a different law governing it. A close approximation might be  $1/n^{3.5}$ . However, it does seem that a smaller proportion of authors write more than one paper than those in the hard sciences.

Information Science Abstracts was examined to determine who the authors were who published more than one paper. A comparison was then made of the journals indexed in INFORMATION SCIENCE ABSTRACTS with those picked up in the SCIENCE CITATION INDEX in order to determine whether writing many papers increased the number of citations to those papers beyond the normal expectation. The journals in both the aforementioned secondary publications did not differ significantly so that this test could be made. The use of the  $X^2$  method for testing the significant linkages through citations is cited in Parker, Paisley and Garrett's BIBLIOGRAPHIC CITATIONS AS UNOBSTRUSIVE MEASURES OF SCIENTIFIC COMMUNICATION.<sup>13</sup> After performing the test it was found that we must accept the null hypothesis at the .005 level of significance that there is no relationship between the number of papers published and the number of times an author is cited, although one would expect, on probability of visibility alone, that there would be a relationship.

Indiana University in investigating the research needs in information and library science did a content analysis of INFORMATION SCIENCE ABSTRACTS CISA for 1970 and found a "rather surprisingly close fit of the two distributions, one of research projects, the other of publications...that...may give a fairly good picture

14

of what is currently being done in our field." The authors go on to analyze the incidence of occurrence of the various subject categories in ISA: Information Science-Documentation (8.3%); Information Centers and Libraries (17.3%); Specialized Information Services and Systems (13.8%); Information Generation, Dissemination, Collection (5.8%); Information Publishing and Reproduction (1.8%); Information Identification and Translation (3.5%); Analysis of Information (12.5%); Storing and Retrieving of Information (16.8%); Utilization of Information (3.8%); Supporting Research (16.4%). One can take this data and rank the research effort as follows:

| RANK | TASK                                              |
|------|---------------------------------------------------|
| 1    | Information Centers and Libraries                 |
| 2    | Storing and Retrieving of Information             |
| 3    | Supporting Research                               |
| 4    | Specialized Information Services and Systems      |
| 5    | Analysis of Information                           |
| 6    | Information Science - Documentation               |
| 7    | Information Generation, Dissemination, Collection |
| 8    | Utilization of Information                        |
| 9    | Information Identification and Translation        |
| 10   | Information Publishing and Reproduction           |

Within our definition of research it would seem that the applications areas seem to be receiving more attention than the theoretical areas.

Another approach is to look at the tables of contents of the ANNUAL REVIEW OF INFORMATION SCIENCE AND TECHNOLOGY (ARIST), v.1-6. One can see if and where the same interests continue and also compare the number of references pertinent to each chapter versus time. One must assume that the authors have similar capabilities. Table II below has done this:

TABLE II

COMPARISON OF SUBJECTS AND NO. OF REFERENCE/SUBJECT ARIST, V.1-6

| CHAPTER TITLES             | ARIST VOLUMES |    |     |     |     |     |
|----------------------------|---------------|----|-----|-----|-----|-----|
|                            | 1             | 2  | 3   | 4   | 5   | 6   |
| Information Needs and Uses | 23            | 38 | 68  | 58  | 114 | 109 |
| Professional Aspects....   | 90            | 64 | 155 | 103 |     | 40  |

| CHAPTER TITLES                 | ARIST VOLUMES |     |     |     |     |      |
|--------------------------------|---------------|-----|-----|-----|-----|------|
|                                | 1             | 2   | 3   | 4   | 5   | 6    |
| Content Analysis               | 177           | 146 | 133 | 173 | 96  | 50   |
| File Organization              | 97            | 135 | 94  | 150 | 54  |      |
| Automated Language Processing  | 116           | 121 | 142 | 115 |     | 131  |
| Eval. Ind. Sys. (ind. & Abs.)  | 110           |     |     | 106 |     | 133  |
| Hardware Dev.                  | 129           | 154 |     |     |     |      |
| Man-Mach. Comm.                | 99            | 109 | 153 |     |     |      |
| Library Auto.                  | 66            | 83  |     | 151 | 182 | 202  |
| Natl. Issues and Trends        | 25            | 90  |     |     |     |      |
| Applications (Genl.)           | 101           |     |     |     |     |      |
| Info. Centers                  | 73            | *   |     |     |     |      |
| Design of Sys. & Serv.         |               | 64  | 201 | 181 | 134 | 81   |
| Evaluation of Sys. & Serv.     |               | 52  | **  | **  | **  | **   |
| Chem. Compounds                |               | 179 |     |     |     |      |
| Appl. (Med.)                   |               | 147 | 187 |     |     | 156  |
| Publ. & Distr.                 |               | 212 | 48  |     | 100 |      |
| Tech. Proc. Auto.              |               | 51  |     |     |     |      |
| Doc. Retr. In Lib. & Info Ctrs |               |     | 78  | 80  |     | 101  |
| Networks                       |               |     | 190 | 145 |     | **** |
| Appl. (Educ.)                  |               |     | 165 |     |     |      |
| Doc. Diss.                     |               |     |     | 139 | ##  | ***  |
| Intl. Transfer of Info.        |               |     |     | 55  |     | 342  |
| Lib. & Info. Ctr. Mgt.         |               |     |     | 118 | 88  |      |
| Comm. Techn.                   |               |     |     |     | 92  | 57   |
| Reprography & Micro.           |               |     |     | 80  | 94  | 219  |
| Current Awareness              |               |     |     |     | 144 |      |

| CHAPTER TITLES                 | ARIST VOLUMES |      |      |      |      |      |
|--------------------------------|---------------|------|------|------|------|------|
|                                | 1             | 2    | 3    | 4    | 5    | 6    |
| Management I.S.                |               |      |      | 105  |      |      |
| State & Local Govt. Info. Sys. |               |      |      | 71   |      |      |
| Applications (Law)             |               |      |      |      |      | 71   |
| TOTALS                         | 1106          | 1645 | 1614 | 1654 | 1274 | 1692 |

\*Combined with Libr. Auto  
 \*\*Combined with Design  
 \*\*\*Combined with Doc. Diss.  
 \*\*\*\*Combined with Intl. Trans. of Info.

# Incl. Mgt. Info. Sys.  
 ##Incl. Current Awareness

Note that the nubjer of references does not vary appreciably from year to year. Some tentative conclusions might be drawn from this summation. As an area of research, that into the behavior of users has grown steadily over the years; that discussion on professional aspects seems to have peaked and is on the wane; interest in content analysis seems to be decreasing; file organization and management has its ups and downs; automated language processing has remained relatively stable in its research or publication effort; interest in both library and information center automation and in man-machine communications seems to be increasing; design and evaluation of services and systems seems to be decreasing; and research in reprography and microforms seems to be increasing.

Criticisms levelled at the research have always been aimed at the experimental design or the sample size. However, what seems to have been usually overlooked is the time lag between the basic research and the applied research. For example, in a verbal communciation, a number of years ago, when the National Science Foundation was reorganized, a decision was made to not fund those projects that had been getting money because there was no evidence that the research ever bore fruit. Yet, one realizes that the ordinary R&D cycle has a ten to twelve year span.

If one looks at some of the pioneers in information science research by observing both what has happened in terms of their being cited, and what is happening generally one can see the effect of the time lag.

Table III below has the names of some of the people who have provided milestones in information science in the view of this author:

TABLE III  
CITATION TO PAPERS BY INFORMATION  
SCIENCE RESEARCHERS, 1966-1970\*

| NAME         | 1966 | 1967 | 1968 | 1969 | 1970 |
|--------------|------|------|------|------|------|
| Cleverdon, C | 20   | 20   | 41   | 26   | 42   |
| Luhn, H.P.   | 34   | 17   | 16   | 29   | 15   |
| Shannon, W.  |      |      |      |      | 1    |
| Taube, M.    | 14   | 32   | 25   | 19   | 16   |

Cleverdon's relevance and recall and testing methods are still heavily cited and used, e.g. Salton's work. Luhn's selective dissemination of information and keyword-in-context-indexing has supplied much food for thought. It is surprising that Shannon's information theory as applied to information science, to linguistics and to compression is not more cited.

An examination of authors who have written five or more papers annually and appear in the indexes between 1966 and Sept. 1971 were also looked at:

|                   |                    |
|-------------------|--------------------|
| Alan Rees         | (1966, 1968, 1969) |
| Fred Kilhour      | (1966, 1970)       |
| V.M. Pings        | (1968-1970)        |
| Avram, H.D.       | (1969, 1970)       |
| Gopinath, M.A.    | (1969, 1970)       |
| Salton, G.        | (1966, 1970)       |
| Neelameghan, A.   | (1968, 1970)       |
| Ranganathan, S.R. | (1969, 1970)       |

The number of author's writing five or more papers has increased, although this may be due to increased indexing. 1966 (7), 1967 (1), 1968 (10), 1969 (20), 1970 (29).

It would seem that from 1968 on the number of authors writing five or more papers increases by 10. This will have to be observed further.

What has been presented so far is really looking at what has happened in information science research as measured by publication and citation without looking at the content of the papers themselves. Much of the literature speaks to methodology, much of it is redundant, but there are kernels of the future showing up. Increased

attention to microform research, COM and CIM are merging with other technologies such as holography to lead us into investigating storage mechanisms. Compression or the need for increased storage has shown itself in the researches of Ruecking and Kilgour. User needs, and collection building, and architecture for the best use of the facilities by humans is appearing.

A cross-check was also made on the ARIST citations to determine whether the quantitative increases or decreases were relative to the total number of items cited for that volume, and generally speaking they were.

The application of research theories from the fields of psychology, economics, seem to be areas in which the multidisciplinary field is aiming itself at this time. However, the application and time lag between theory and practice is an area for further study.

REFERENCES

1. Vagianos, L. "Information science: A house built on sand." LIBRARY JOURNAL. :153-7 (Jan. 1972)
2. Semenyuk, E.P. TOWARD A SCIENCE OF INFORMATION. 7 May 1971. JPRS 53067.  
Translated from: NAUCHNO-TEKHNICHESKAYA INFORMATSIYA. 1617:5-13 (1971)
3. Adler, A. "Mathematics and creativity." THE NEW YORKER. 47(53):39. Feb. 19, 1972.
4. Conferences on Training Science Information Specialists, 1962. PROCEEDINGS.
5. Kaplan, A. THE CONDUCT OF INQUIRY. San Francisco, Chandler, 1964. p.4
6. idem. p.146
7. Webster's International Dictionary. 3rd.
8. Cuadra, C. "Identifying key contributions to information science." AMERICAN DOCUMENTATION. 15:289-95 (1964)
9. deSolla Price, D. LITTLE SCIENCE, BIG SCIENCE. NY, Columbia, 1963. p.80
10. idem. p.82
11. Page, D. "A proposal for a computer-based interactive scientific community." COMMUNICATIONS OF THE ACM. 15:71-5 (1972)
12. De Solla Price, D. op.cit. p.41
13. Stanford University. Institute for Communication Research. BIBLIOGRAPHIC CITATIONS AS UNOBSTRUSIVE MEASURES OF SCIENTIFIC COMMUNICATION. Oct. 1967. NSF Grant GN-434
14. Indiana University. Graduate Library School. Research Center for Library and INFORMATION SERVICES. FINAL REPORT. By Miles A. Libbey, Bernard M. Fry. 31 Dec. 1971. TISA report no. 39. p.5.